

REMARKS

I. Claims Status

A listing of claims is presented as a courtesy to the Examiner. No claim amendments are made herein.

Claim 8 was previously cancelled.

Claims 1-7 and 9-12 are pending and stand rejected.

Reconsideration of the application is respectfully requested in view of the Remarks below.

II. Rejections under 35 U.S.C. § 103(a)

Claims 1-7 and 9-12 are rejected as being unpatentable over Uedaira et al., U.S. Patent No. 4,520,004, ("Uedaira") in view of Guo et al., U.S. Patent No. 6,827,916, ("Guo") and Vita et al., U.S. Patent No. 2,985,506, ("Vita") or as being unpatentable over Harada et al., US 2002/0090335, ("Harada") in view of Guo and Vita and either one of Uedaira or Woditsch et al., U.S. Patent No. 4,173,485, ("Woditsch").

According to the Examiner, Uedaira teaches that barium chloride and titanium tetrachloride are mixed in a suspension of pH 13.5 or above, adjusted by KOH, NaOH, etc., and that the Ba/Ti ratio is 0.7-5 (col. 4 of Uedaira) and Woditsch teaches that by precipitating the hydroxides at a constant pH-value, it is possible to obtain commercially processible, reactive hydroxides from alkaline earth metal hydroxides (col. 2 of Woditsch).

Applicants respectfully traverse and request reconsideration in view of the following remarks.

As previously mentioned, claim 1 recites, inter alia, “maintaining the reaction mixture at a constant OH⁻ concentration”. However, Uedaira, at col. 3, line 66 to col. 4, line 26, only teaches that the hydrolyzation product of titanium Ti compound is reacted with a water-soluble metal salt in a strong alkaline aqueous solution or suspension having a pH of higher than 13.0, preferably 13.5 or above. Uedaira fails to teach that such a pH value should be maintained constant during the reaction. That is to say, Uedaira fails to teach an essential technical feature recited in the pending claim 1: “maintaining the reaction mixture at a constant OH⁻ concentration”. As known to those of skill in the art, the pH value will decrease in Uedaira as the reaction proceeds. As explained in a prior response, when the reaction is performed in a multi-step process (as in Uedaira and Hadara), the concentration of OH⁻ steadily decreases during the course of the reaction. There is no rationale contained in Uedaira to maintain the OH⁻ levels as a constant during the course of the reaction. Given the substantial drop in OH⁻ levels during the course of the reaction, as taught by Uedaira, Applicants assert that Uedaira teaches away from maintaining the OH⁻ levels as a constant concentration over the course of the reaction.

In addition, Applicants assert that the burden of showing a constant OH⁻ concentration in Uedaira falls upon the Examiner. The pH of the reaction solution disclosed by Uedaira would fall as the reaction proceeded, and it is not clear where in Uedaira the Examiner finds teachings of a constant pH over the course of the reaction.

Importantly, the present invention requires maintenance of a constant pH while the reaction occurs. It would not have been obvious to one of ordinary skill in the art to use the teachings of Uedaira to appreciate the unexpected results achieved by maintaining a constant pH during the reaction.

In addition, Uedaira teaches a method of manufacturing metal titanate fine powder (MTiO_3) in a two-step process: (1) preparing hydrolyzed compound of titanium compound, and (2) reacting said hydrolyzed compound of titanium compound with water soluble metal salt of Ba, Sr or Ca in an aqueous alkaline solution having pH not less than 13 (col. 2, lines 21-31) and the reaction will take a few hours (Examples of Uedaira, beginning at col. 6). As mentioned in the previous response, however, the reaction according to the present invention, and as claimed in claim 1, is carried out in accordance with the principle of a one-step process and macroscopically, the aqueous solution of titanium and barium is reacted with an excess of OH^- in one step (which is instantaneous and rapid) to obtain barium titanate powders as described in the present invention.

The novel present invention requires a one-step process to prepare barium titanate powders. Nowhere does Uedaira teach a simultaneous reaction performed at a constant pH, or provide a rationale to perform the reaction in one-step at a constant pH. It would not have been obvious for one of ordinary skill in the art to arrive at the present invention upon the teachings of Uedaira.

The Examiner also asserts that Woditsch teaches a process for making alkaline earth titanates by precipitating hydroxides at a constant pH value. Woditsch teaches that only by precipitating the hydroxides at a constant pH value, it is possible to obtain commercially

processable, reactive hydroxides from zinc and alkaline earth metal hydroxides and TiO₂-hydrolyzate sludges, which is then calcined at high temperatures to form the corresponding alkaline earth metal titanates. (Col. 2, lines 33-39) According to Woditsch, the purpose of maintaining a substantially constant pH value is to obtain readily filterable and washable precipitates, which can be calcined at high temperatures to form titanates (col. 2, lines 2-11), and the production of zinc or alkaline earth metal titanates involves two steps: (1) precipitating zinc or alkaline earth metal hydroxides in the presence of finely divided titanium dioxide to obtain reactive hydroxides, and then (2) calcination (col. 1, lines 49-54).

To the contrary, the reaction according to the present invention is carried out in accordance with the principle of one-step process and macroscopically, the aqueous solution of titanium and barium is reacted with an excess of OH⁻ in one step to obtain barium titanate powders as described in the present invention.

In view of the above, a person skilled in the art would not conceive the technical solution of the present invention by simply combining the reaction of Uedaira with the teachings of Vita and the Higee reactor of Guo. Neither would a person of skill in the art simply combine the reaction of Harada with the teachings of Vita and the Higee reactor of Guo and the reaction of Uedaira or Woditsch.

Based on the above reasons, Applicants request that the obviousness rejections be withdrawn.

Applicants further maintain and reiterate their previous arguments presented in the responses filed December 10, 2007, to the Office Action dated June 8, 2007 and March 28, 2007, to the Office Action dated November 29, 2006.

CONCLUSION

In view of the foregoing remarks, Applicants believe the pending application is in condition for allowance, and earnestly solicit same.

If fees in addition to those transmitted herewith should be required for the filing of this response, the Commissioner is hereby authorized and requested to charge any such fees to Darby and Darby Deposit Account No. 04-0100.

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Respectfully submitted,

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